federal register

WEDNESDAY, JUNE 23, 1971
WASHINGTON, D.C.
Volume 36 ■ Number 121

PART II

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

■

TRACK SAFETY STANDARDS

Notice of Proposed Rule Making

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[49 CFR Part 213]

[Docket No. RST-1; Notice 1]

TRACK SAFETY STANDARDS

Notice of Proposed Rule Making

The Federal Railroad Administration (FRA) proposes to amend Chapter II of Subtitle B of Title 49 of the Code of Federal Regulations by adding a Part 213 prescribing initial safety standards for track and track inspection as required by the Federal Railroad Safety Act of 1970 (84 Stat. 971, 45 U.S.C. 421 et seq.). Section 202(e) of the Act requires initial safety standards based upon existing railroad safety standards and data to be issued before October 17, 1971.

Proposed Part 213 sets forth initial safety standards for track and track inspection. Further notices of proposed rule making will be addressed to initial railroad equipment standards and operating practices.

Interested persons are invited to participate in the making of these initial track safety standards by submitting written data, views, or comments. Communications should identify the regulatory docket number and notice number, and should be submitted in triplicate to the Docket Clerk, Office of Hearings and Proceedings, Federal Railroad Administration, Attention: Docket No. RST-1, 400 Seventh Street SW., Washington, DC 20590. Communications received before July 31, 1971, will be considered by the Federal Railroad Administrator before taking final action on the proposed standards. All comments received will be available for examination by interested persons at any time during regular working hours in Room 5100, Nassif Building, 400 Seventh Street SW., Washington, DC. The proposals contained in this notice may be changed in light of comment received.

In developing proposed initial track safety standards, FRA considered information available within FRA and information as to "existing safety data and standards" made available to it by representatives of the Association of American Railroads, railroad industry, railroad labor organizations, and State regulatory agencies. Informal meetings were held with representatives of those groups to assist FRA in the refinement of the information. Technical publications provided by foreign governments also were considered in the preparation of the proposed initial track safety standards.

The proposed initial standards are, in part, based on the railroad industry's own recommended standards. The proposed initial standards, therefore, will be similar to those recommended industry standards in several respects.

For several reasons, however, it is necessary to substantially reorganize and revise the language that will be incorporated into the Federal standards. One major consideration is that the industry standards, intended to serve only as recommendations, are not written as a regulatory document, which the standard proposed in this notice must be. Violation of these regulatory standards will be subject to a penalty of at least $250 and up to $2,500 per day for each violation. Therefore it is important that the regulatory requirements be written in terms that clearly indicate what the minimum requirements are.

FRA intends to state the Federal requirements in performance terms rather than detailed specifications, wherever it is possible to do so without lowering the level of safety. In some cases it may not be possible to substitute performance requirements without further research. Also it may be necessary to retain some specific requirements because there is not time to develop an enforceable performance-type substitute within the period specified by the Act.

Effective date of proposed regulations. The FRA recognizes that the railroad industry will need a reasonable period of time in which to comply with some of the proposed regulations. Therefore it is proposed in § 213.3(c) that the regulations become effective October 15, 1971, with respect to newly constructed track and rebuilt track, and effective October 15, 1972, with respect to existing track. Any person who identifies a requirement that needs a longer lead time to implement should indicate specifically the problems that would arise from an early requirement of compliance, and the time needed to solve those problems.

Cost/benefit determinations. In evaluating the proposed regulations, commentators should bear in mind that every safety regulation has a cost factor, either a direct purchase and operation cost or an indirect cost resulting from operating at less than maximum efficiency. Every safety regulation also has a benefit factor—the increase in safety to the public and railroad personnel and a benefit to the railroads in reducing its casualty losses and damage claims. Although the cost of complying with a regulation may be initially borne by the railroad, it is ultimately paid by the public. Thus, the cost/benefit determination to be made by the FRA with respect to a particular safety requirement is whether the safety benefit to the public and railroad personnel justifies the ultimate monetary cost of compliance to the public. For this reason, the regulations proposed in this notice should be evaluated as to costs and benefits. When comments on the specific proposed regulations are submitted, these factors should be discussed fully. The information resulting from these cost/benefit determinations will be most helpful to the FRA in making decisions with respect to particular proposed regulations.

The time within which the initial standards must be issued does not permit full coverage of all of the areas of track construction and maintenance that would perhaps be included in a comprehensive set of standards. The initial regulations, therefore, relate directly to operating speeds and concentrate on those areas that the FRA believes to be the principal sources of railroad related accidents.

The proposed Part 213 applies to standard-gage track of the general railroad system of transportation, but does not apply to either (1) industrial track located more than 10 feet inside the limits of a nonrailroad installation, or (2) track used exclusively for rapid transit, commuter, or other short-haul passenger service in metropolitan or suburban areas.

Rapid transit and commuter service track, although not included in the initial proposed track standards, may be included in future rulemaking proceedings.

The proposed initial track standards are divided into several subparts covering roadbed, track geometry, track structure, and track appliances. In addition there is a subpart which prescribes the method and frequency of track inspections, including an annual inspection of rail for internal defects. Track owners would have the duty of maintaining their track in accordance with the standards and performing the required inspections. In accordance with the Act, for each violation of the regulations a track owner would be subject to a civil penalty of not less than $250 or more than $2,500 for each offense, subject to compromise by the Federal Railroad Administrator. Persons who are involved in or concerned with the leasing of track are requested to comment on the owner/leasee relationships as it would be affected by the proposed regulations.

This notice is issued under the authority of the Federal Railroad Safety Act of 1970 (84 Stat. 971 et seq.; 45 U.S.C. 421 et seq.) and § 1.49(n) of the regulations of the Office of the Secretary of Transportation (49 CFR 1.49(n)).

Issued in Washington, D.C., on June 16, 1971.

CARL V. LYON,
Acting Administrator,
Federal Railroad Administration.

PART 213—TRACK SAFETY STANDARDS

Subpart A—General

Sec.	
213.1	Scope of part.
213.3	Application.
213.5	Responsibility of track owners.
213.7	Designation of qualified persons to supervise certain renewals and inspect track.
213.9	Classes of track: operating speed limits.
213.11	Restoration or renewal of track under traffic conditions.
213.13	Measuring track not under load.
213.15	Civil penalty.
213.17	Exemptions.

Subpart B—Roadbed

213.31	Scope.
213.33	Drainage.
213.35	Embankments and excavations.
213.37	Vegetation.
213.39	Removal of objects and correction of hazardous conditions.

Subpart C—Track Geometry

Sec.
213.51 Scope.
213.53 Gage.
213.55 Alinement.
213.57 Curves; elevation and speed limitations.
213.59 Elevation of curved track; runoff.
213.61 Classes 3 through 6 curved track; data and markings.
213.63 Track surface.

Subpart D—Track Structure

213.101 Scope.
213.103 Ballast; general.
213.105 Ballast section; crushed rock or crushed slag.
213.107 Ballast section; other than crushed rock or crushed slag.
213.109 Cross ties.
213.111 Defective ties.
213.113 Defective rails.
213.115 Rail end mismatch.
213.117 Rail end batter.
213.119 Continuous welded rail.
213.121 Rail joints.
213.123 Tie plates.
213.125 Rail anchoring.
213.127 Track spikes.
213.129 Track shims.
213.131 Planks used in shimming.
213.133 Turnouts and track crossings generally.
213.135 Switches.
213.137 Frogs.
213.139 Spring rail frogs.
213.141 Self-guarded frogs.
213.143 Frog guard rails and guard faces; gage.

Subpart E—Track Appliances and Track Related Devices

213.201 Scope.
213.203 Operation of track appliances and track related devices generally.
213.205 Derails.
213.207 Switch heaters.

Subpart F Inspection

213.231 Scope.
213.233 Track inspections.
213.235 Switch and track crossing inspections.
213.237 Inspection of rail.
213.239 Special inspections.
213.241 Inspection records.

Appendix A—Maximum allowable operating speeds for curved track.

AUTHORITY: The provisions of this Part 213 issued under sections 202 and 209, 84 Stat. 971, 975; 45 U.S.C. 431 and 438 and § 1.49(n) of the Regulations of the Office of the Secretary of Transportation; 49 CFR 1.49(n).

Subpart A—General

§ 213.1 Scope of part.

This part prescribes initial minimum safety requirements for railroad track that is part of the general railroad system of transportation. The requirements prescribed in this part apply to specific track conditions existing in isolation. Therefore, a combination of track conditions, none of which individually amounts to a deviation from the requirements in this part, may require remedial action to provide for safe operations over that track.

§ 213.3 Application.

(a) Except as provided in paragraphs (b) and (c) of this section, this part applies to all standard-gage track in the general railroad system of transportation.

(b) This part does not apply to track—

(1) Located more than 10 feet inside an installation which is not part of the general railroad system of transportation; or

(2) Used exclusively for rapid transit, commuter, or other short-haul passenger service in a metropolitan or suburban area.

(c) Until October 16, 1972, this part does not apply to track, construction of which began before October 15, 1971. However, it does apply to track, construction of which began after October 14, 1971, or which is rebuilt after that date.

§ 213.5 Responsibility of track owners.

Any owner of track to which this part applies who knows or should know that the track does not comply with the requirements of this part, shall—

(a) Bring the track into compliance;

(b) Halt operations over that track; or

(c) Reduce operating speed over that track as required by this part.

§ 213.7 Designation of qualified persons to supervise certain renewals and inspect track.

(a) Each track owner to which this part applies shall designate qualified persons to supervise restorations and renewals of track under traffic conditions. Each person designated must have—

(1) At least 1 year of supervisory experience in railroad track maintenance; and

(2) Demonstrated to the owner that he—

(i) Knows and understands the requirements of this part;

(ii) Can detect deviations from those requirements; and

(iii) Can prescribe appropriate remedial action to correct or safely compensate for those deviations.

(b) Each track owner to which this part applies shall designate qualified persons to inspect track for defects. Each person designated must have—

(1) At least 1 year of experience in railroad track inspection; and

(2) Demonstrated to the owner that he—

(i) Knows and understands the requirements of this part;

(ii) Can detect deviations from those requirements; and

(iii) Can prescribe appropriate remedial action to correct or safely compensate for those deviations.

(c) Each designation under paragraphs (a) and (b) of this section must be made in writing and kept available for inspection and copying by the Federal Railroad Administrator or his designee.

§ 213.9 Classes of track: operating speed limits.

(a) Except as provided in paragraph (b) of this section and §§ 213.57(b), 213.59(a), 213.105(d), 213.113(a), and 213.137 (b) and (c), the following maximum allowable operating speeds apply:

Over track that meets all of the requirements prescribed in this part for—	*The maximum allowable operating speed is—*
Class 1 track	10 m.p.h.
Class 2 track	25 m.p.h.
Class 3 track	40 m.p.h.
Class 4 track	60 m.p.h.
Class 5 track	80 m.p.h.
Class 6 track	110 m.p.h.

(b) If a segment of track does not meet all of the requirements for its intended class, it is reclassified to the highest class of track for which it does meet all of the requirements of this part. However, if it does not at least meet the requirements for class 1 track, no operations may be conducted over that segment except as provided in § 213.11.

§ 213.11 Restoration or renewal of track under traffic conditions.

If, during a period of restoration or renewal, track is under traffic conditions and does not meet all of the requirements prescribed in this part, the work and operations on the track must be under the continuous supervision of a person designated under § 213.7(a).

§ 213.13 Measuring track not under load.

When track that is not under load is measured to determine whether or not it complies with this part and there is evidence of rail movement under load, the amount of that movement must be added to the no-load measurements.

§ 213.15 Civil penalty.

(a) Any owner of track to which this part applies that violates any requirement prescribed in this part is liable to a civil penalty of at least $250 but not more than $2,500.

(b) For the purpose of this section, each day a violation persists shall be treated as a separate offense.

(c) The Administrator may compromise a civil penalty for any amount, but not less than $250.

§ 213.17 Exemptions.

(a) Any owner of track to which this part applies may petition the Federal Railroad Administrator for a permanent or temporary waiver of compliance with any requirement prescribed in this part.

(b) Each petition for a waiver under this section must be filed in the manner and contain the information required by § 211.11 of this chapter.

(c) Each petition received is processed in the manner prescribed in Part 211 of this chapter.

(d) If the Administrator finds that a waiver of compliance is in the public interest and is consistent with railroad safety, he may grant the waiver. Notice of each waiver granted is published in the FEDERAL REGISTER together with a statement of the reasons therefor.

Subpart B—Roadbed

§ 213.31 Scope.

This subpart prescribes minimum requirements for roadbed and areas immediately adjacent to roadbed.

§ 213.33 Drainage.

(a) Each culvert and bridge passing under track must be kept sufficiently free

of obstruction to accommodate expected water flow for the area concerned.

(b) Each drainage facility running alongside a roadbed must be maintained to accommodate the expected water flow for the area concerned.

(c) If, after drainage facilities are constructed, there is a significant change in the water flow adjacent to the roadbed, each existing drainage facility must be modified or additional drainage facilities must be installed, as the case may be, to accommodate the change.

§ 213.35 Embankments and excavations.

(a) In maintaining roadbed embackments and excavations, the stability and erosion characteristics of the material used in the slope must be taken into account.

(b) Each slope subject to excessive scour, whether by water flow or wave action, must be paved, rip-rapped, or similarly protected.

§ 213.37 Vegetation.

Vegetation on and adjacent to roadbed must be controlled to ensure that it does not—

(a) Become a fire hazard to track-carrying structures;

(b) Prevent proper functioning of drainage facilities;

(c) Obstruct visibility of railroad signs and signals;

(d) Interfere with railroad employees performing normal trackside duties;

(e) Prevent proper functioning of signal and communication lines; or

(f) Prevent railroad employees from visually inspecting moving equipment from their normal duty stations.

§ 213.39 Removal of objects and correction of hazardous conditions.

If an object or hazardous condition within 10 feet of the center line of track impedes the safe passage of equipment or prevents railroad employees from safely performing their duties, the owner of the track shall remove the object or correct the hazardous condition or give appropriate warning notification.

Subpart C—Track Geometry

§ 213.51 Scope.

This subpart prescribes requirements for the gage, alinement, and surface of track, and the elevation of outer rails and speed limitations for curved track.

§ 213.53 Gage.

(a) Gage is measured between the heads of the rails at right angles to the rails in a plane five-eighths of an inch below the top of the rail head. Standard gage is 4 feet 8½ inches.

(b) Gage must be within the limits prescribed in the following table:

Class of track	The gage of tangent track must be—		The gage of curved track must be—		The gage of frogs and track crossing must be—	
	At least—	But not more than—	At least—	But not more than—	At least—	But not more than—
1	4′ 8″	4′ 9¾″	4′ 8″	4′ 9¾″	4′ 8¼″	4′ 9¼″
2 and 3	4′ 8″	4′ 9⅝″	4′ 8″	4′ 9½″	4′ 8¼″	4′ 9″
4	4′ 8″	4′ 9⅝″	4′ 8″	4′ 9½″	4′ 8¼″	4′ 8¾″
5	4′ 8″	4′ 9″	4′ 8″	4′ 9¼″	4′ 8¼″	4′ 8¾″
6	4′ 8″	4′ 8¾″	4′ 8″	4′ 9″	4′ 8¼″	4′ 8¾″

(c) Any variation in gage must be uniform and may not be more than one-quarter inch in 31 feet.

§ 213.55 Alinement.

The actual position of track in the plane established by the two rails may not deviate from uniformity more than the amount prescribed in the following table:

Class of track	Tangent track	Curved track
	The deviation of the mid-offset from 62-foot line [1] may not be more than—	The deviation of the mid-ordinate from 62-foot chord [2] may not be more than—
1	4″	4″
2	2″	2″
3	1½″	1½″
4	1¼″	1¼″
5	5/8″	5/8″
6	3/8″	3/8″

[1] The ends of the line must be at points on the gage side of the line rail, five-eighths of an inch below the top of the railhead. Either rail may be used as the line rail, however, the same rail must be used for the full length of that tangential segment of track.

[2] The ends of the chord must be at points on the gage side of the outer rail, five-eighths of an inch below the top of the railhead.

§ 213.57 Curves; elevation and speed limitations.

(a) Except as provided in § 213.63, the outside rail of a curve may not be lower than the inside rail or have more than 6 inches of elevation.

(b) The maximum allowable operating speed for each curve is determined by the following formula:

$$V_{max} = \sqrt{\frac{E_a + 3}{0.0007d}}$$

where

V_{max} = Maximum allowable operating speed (miles per hour).

E_a = Actual elevation of the outside rail (inches).

d = Degree of curvature (degrees).

Appendix A to this part is a table of maximum allowable operating speed computed in accordance with this formula for various elevations and degrees of curvature.

§ 213.59 Elevation of curved track; runoff.

(a) If a curve is elevated, the full elevation must be provided throughout the curve, unless physical conditions do not permit. If elevation runoff occurs in a curve, the actual minimum elevation must be used in computing the maximum allowable operating speed for that curve under § 213.57(b).

(b) Elevation runoff must be at a uniform rate, within the limits of track surface deviation prescribed in § 213.63, and it must extend at least the full length of the spirals. If physical conditions do not permit a spiral long enough to accommodate the minimum length of runoff, part of the runoff may be on tangent track.

§ 213.61 Classes 3 through 6 curved track; data and markings.

(a) Each owner of track to which this part applies shall maintain a record of each curve in its classes 3 through 6 track. The record must contain the following information:

(1) Location.

(2) Degree of curvature.

(3) Actual elevation.

(4) Description of elevation runoff.

(5) Maximum allowable operating speed.

(b) Each owner of track to which this part applies shall mark, by monument, metal tag, or other permanent means, the maximum and minimum points in the elevation transition on each curve in its classes 3 through 6 track.

§ 213.63 Track surface.

Each owner of track to which this part applies shall maintain the surface of its track within the limits prescribed in the following table:

Track surface	Class of track					
	1	2	3	4	5	6
The runoff in any 31 feet of rail at the end of a raise may not be more than	2½″	2″	1¾″	1½″	1″	½″
The deviation from uniform profile on either rail at the midordinate of a 62-foot chord may not be more than	2½″	2″	1¾″	1½″	1″	½″
Deviation from designated elevation on spirals may not be more than	1¼″	1⅛″	1″	⅞″	¾″	½″
Variation in cross level [1] on spirals in any 31 feet may not be more than	1¾″	1½″	1″	⅞″	¾″	½″
Deviation from zero cross level [1] at any point on tangent or from designated elevation on curves between spirals may not be more than	2¼″	1¾″	1½″	1¼″	1″	½″
The difference in cross level [1] between any two points less than 62 feet apart on tangents and curves between spirals may not be more than	2¼″	1¾″	1½″	1¼″	1″	⅝″

[1] To determine cross level, measure the difference in elevation of the top surfaces of the two rails at right angles to the alinement of the track. The measuring instrument must be accurate to one-sixteenth inch.

Subpart D—Track Structure

§ 213.101 Scope.

This subpart prescribes minimum requirements for ballast, cross ties, track assembly fittings, and the physical condition of rails.

§ 213.103 Ballast; general.

Unless it is otherwise structurally supported, all track must be supported by material which will—

(a) Transmit and distribute the load of the track and railroad rolling equipment to the subgrade;

(b) Restrain the track laterally, longitudinally, and vertically under dynamic loads imposed by railroad rolling equipment and thermal stress exerted by the rails;

(c) Provide adequate drainage for the track; and

(d) Maintain proper track cross-level, surface, and alinement.

§ 213.105 Ballast section; crushed rock or crushed slag.

(a) When conventional jointed rails and crushed rock or crushed slag are used, the ballast section must comply with the following table:

Class of track	The average width of the ballast shoulder beyond the ends of 8-foot [1] cross ties, measured from the bottom of the ends of the ties, over any 8 consecutive cross ties must be at least—	The average percent of total crib volume occupied by ballast over any 8 consecutive cross ties must be at least—
	Inches	
1 and 2	6	50
3	7	60
4	10	70
5	15	80
6	19	90

[1] If cross ties more than 8 feet long are used, the minimum average width of the ballast shoulder may be reduced by one half of the length over 8 feet, but the width of the ballast section may not be less than the length of the tie.

(b) When continuous welded rail and crushed rock or crushed slag ballast are used, the ballast section must have a shoulder width of at least 10 inches extending horizontally from the ends of the cross ties from a point 6 inches above the bottom of the cross ties. Cribs must be filled with ballast to at least 90 percent of their volume.

(c) Regardless of the type of rail used, when crushed rock or crushed slag ballast is used the depth of ballast under the cross ties must be at least 5 inches.

(d) If track is disturbed, a person designated under § 213.7(b) shall examine the track to determine whether or not the ballast is sufficiently compacted to perform the functions described in § 213.103. If the person making the examination considers it to be necessary in the interest of safety, operating speed over the disturbed segment of track must be reduced to a speed that he considers safe.

§ 213.107 Ballast section; other than crushed rock or crushed slag.

If a material other than crushed rock or crushed slag is used for ballast, the section must be increased as necessary to meet the functional requirements of § 213.103.

§ 213.109 Cross ties.

(a) Cross ties may be made of any material to which rails can be securely fastened. The material must be capable of holding the rails to gage within the limits prescribed in § 213.53(b) and distributing the load from the rails to the ballast section.

(b) If timber cross ties are used, the number and size of cross ties required are as follows:

Class of track	The size of cross ties must be at least—	And the average number of cross ties per 39-foot length of track in any five consecutive 39-foot lengths must be—
1	6″ x 8″ x 8′	16
	or	
	6″ x 6″ x 8′	17
2	6″ x 8″ x 8′	17
	or	
	6″ x 6″ x 8′	18
3	6″ x 8″ x 8′	19
	or	
	6″ x 6″ x 8′	20
4	7″ x 8″ x 8′	20
	or	
	6″ x 8″ x 8′	21
5	7″ x 9″ x 8′6″	20
	or	
	7″ x 8″ x 8′	21
	or	
	6″ x 8″ x 8′	22
6	7″ x 9″ x 8′6″	23
	or	
	7″ x 8″ x 8′	24

(c) The space between adjacent cross ties may not vary more than the width of one cross tie.

(d) Except in an emergency or for a temporary installation of not more than 6 months' duration, cross ties may not be interlaced to take the place of switch ties.

§ 213.111 Defective ties.

(a) A timber cross tie is considered to be defective when it is—

(1) Broken through;

(2) Split to the extent it will not hold spikes or will allow the ballast to work through;

(3) So deteriorated that the tie plate or base of rail can move laterally more than one-half inch relative to the cross tie;

(4) Cut by the tie plate through more than 40 percent of its thickness; or

(5) Not spiked as required by § 213.127.

(b) Track that meets the requirements of § 213.109(b) for a particular class is considered to continue to meet those requirements as long as the number of defective timber cross ties in any 39 feet of track does not exceed the limits prescribed in the following table:

Class of track	Type of track	Of the number of cross ties required in any 39-foot length of track by § 213.109(b), the number of defective cross ties may not be more than any of the following:		
		Total	Adjacent	Under a joint
1	Tangent	13	3	1
	Curved	13		
2, 3	Tangent	10	2	1
	Curved	10		
4, 5, 6	Tangent	8	0	0
	Curved	6		

§ 213.113 Defective rails.

(a) If an owner of track to which this part applies learns, through inspection or otherwise, that a rail in that track contains any of the defects listed in the following table, a person designated under § 213.7(b) shall determine whether or not the track may continue in use. If he determines that the track

may continue in use, operating speed over the defective rail may not be more than that prescribed in the table until the defective rail is replaced:

Defect	*Until defective rail replaced, operating speed over that rail may not be more than—*
Transverse fissure [1]	10 m.p.h.
Compound fissure [1]	
Horizontal split head [1]	
Vertical split head [1]	
Split web [1]	
Piped rail [1]	
Bolt hole crack	
Head web separation	
Broken base [1]	
Detail fracture [1]	10 m.p.h., unless fully bolted angle bars are applied to the defective rail, in which case operating speed may not be more than 50 m.p.h. or the maximum allowable operating speed otherwise prescribed in § 213.9 for the class of track concerned, whichever is lower.
Engine burn fracture [1]	
Ordinary break [1]	
Broken or defective weld	
Damaged rail [1]	

(b) If a rail evidences any of the conditions listed in the following table, the remedial action prescribed in the table must be taken:

Condition	Remedial action: If a person designated under § 213.7 determines that condition requires rail to be replaced	Remedial action: If a person designated under § 213.7(b) determines that condition does not require rail to be replaced
Shelly spots [1]	Schedule the rail for replacement.	Inspect the rail for internal defects at intervals of not more than every 6 months.
Head checks [1]		
Engine burn (but not fracture)		
Mill defect		
Flaking [1]	...do...	Inspect the rail as prescribed in § 213.231(c).
Slivered		
Corrugated		
Corroded		

[1] As defined in the American Railway Engineering Association Manual for Railway Engineering, Volume 1, Chapter 4, Part 3, page 7, Document date 1962.

§ 213.115 Rail end mismatch.

Any mismatch of rails at joints may not be more than that prescribed by the following table:

Class of track	Any mismatch of rails at joints may not be more than the following—: On the tread of the rail ends	On the gage side of the rail ends
1	¼"	¼"
2	3/16"	3/16"
3	1/8"	1/8"
4, 5	1/8"	1/8"
6	1/16"	1/16"

[1] As defined in the American Railway Engineering Association Manual for Railway Engineering, Volume 1, Chapter 4, Part 3, page 7, document date 1962.

§ 213.117 Rail end batter.

(a) Rail end batter is the depth of depression at one-half inch from the rail end. It is measured by placing an 18-inch straight edge on the tread on the rail end, without bridging the joint, and measuring the distance between the bottom of the straight edge and the top of the rail at one-half inch from the rail end.

(b) Rail end batter may not be more than that prescribed by the following table:

Class of track	*Rail end batter may not be more than— (inch)*
1	3/8
2	¼
3	¼
4	3/16
5	1/8
6	1/16

§ 213.119 Continuous welded rail.

(a) When continuous welded rail is being installed, it must be installed at, or adjusted for, a rail temperature that will not result in compressive or tensile forces that may produce lateral displacement of the track or pulling apart of rail ends or welds.

(b) After continuous welded rail has been installed it should not be disturbed at rail temperatures higher than its installation or adjusted installation temperature.

§ 213.121 Rail joints.

(a) Each rail joint, insulated joint, and compromise joint must be of the proper design and dimensions for the rail on which it is applied.

(b) If a joint bar on any class of truck, other than class 1, is cracked, broken, or because of wear allows vertical movement of either rail when all bolts are tight, it must be replaced.

(c) If a joint bar is cracked or broken between the middle two bolt holes it must be replaced.

(d) In the case of conventional jointed track, each rail must be bolted with at least two bolts at each joint.

(e) In the case of continuous welded rail track, each rail must be bolted with at least three bolts at each joint, unless it has been drilled for only two bolts in which case it must be bolted with two bolts at each joint.

(f) Each joint bar must be held in position by track bolts tightened to a tension of not more than 30,000 pounds or less than 5,000 pounds per bolt, to allow the joint bar to firmly support the abutting rail ends and to allow longitudinal movement of the rail in the joint to accommodate expansion and contraction due to temperature variations. When out-of-face, no-slip, joint-to-rail contact exists by design, the requirements of this paragraph do not apply. Those locations are considered to be continuous welded rail track and must meet all the requirements for continuous welded rail track prescribed in this part.

(g) No rail or angle bar having a torch-cut or burned bolt hole may be used in track.

§ 213.123 Tie plates.

(a) Tie plates of the proper design must be used under the running rails on all timber bridge ties and switch ties.

(b) In classes 1 and 2 track, there must be tie plates under the running rails on at least eight of any 10 consecutive ties on curves in which the degree of curvature is more than 2°. In classes 3 through 6 track there must be tie plates under the running rails on at least eight of any 10 consecutive ties.

(c) Tie plates having shoulders must be placed so that no part of the shoulder is under the base of the rail.

§ 213.125 Rail anchoring.

Longitudinal rail movement caused by temperature changes must be effectively controlled. If rail anchors which bear on the sides of ties are used for this purpose, they must be on the same side of the tie on both rails.

§ 213.127 Track spikes.

(a) When conventional track is used with timber ties and cut track spikes, the rails must be spiked to the ties with at least one line-holding spike on the gage side and one line-holding spike on the field side. The total number of track spikes per rail per tie, including plate-holding spikes, must be at least the number prescribed in the following table:

Class of track	Minimum number of track spikes per rail per tie, including plate-holding spikes: Tangent track and curved track with not more than 2° of curvature	Curved track with more than 2° but not more than 4° of curvature	Curved track with more than 4° but not more than 6° of curvature	Curved track with more than 6° of curvature
1	2	2	2	2
2	2	2	3	3
3	2	3	3	4
4, 5	2	3	4	
6	3			

(b) A tie that does not meet the requirements of paragraph (a) of this section is considered to be defective for the purposes of § 213.111.

§ 213.129 Track shims.

(a) If track does not meet the geometric standards in Subpart C of this part and working of ballast is not possible due to weather or other natural conditions, prebored track shims may be installed to correct the deficiencies. If shims are used, they must be removed and track resurfaced as soon as weather and other natural conditions permit.

(b) When shims are used they must be—

(1) At least the size of the tie plate;
(2) Inserted directly on top of the tie, beneath the rail and tie plate;
(3) Spiked directly to the tie with spikes which penetrate the tie at least 4 inches.

(c) When a rail is shimmed more than 1 inch, it must be securely braced on at least every third tie for the full length of the shimming.

(d) When a rail is shimmed more than 2 inches a combination of shims and 2-inch or 4-inch planks, as the case may be, must be used with the shims on top of the planks.

§ 213.131 Planks used in shimming.

(a) Planks used in shimming must be at least as wide as the tie plates, but in no case less than 5½ inches wide. Whenever possible they must extend the full length of the tie. If a plank is shorter than the tie, it must be at least 3 feet long and its outer end must be flush with the end of the tie.

(b) When planks are used in shimming on uneven ties, or if the two rails being shimmed heave unevenly, additional shims may be placed between the ties and planks under the rails to compensate for the unevenness.

(c) Planks must be nailed to the ties with at least four 8-inch wire spikes. Before spiking the rails or shim braces, planks must be bored with ⅝-inch holes.

§ 213.133 Turnouts and track crossings generally.

(a) Each bolt, nut, pin, and other fastening in turnouts and track crossings must be in place, tight, and in sound condition, and each switch, frog, and guard rail must be kept free of obstructions that may interfere with the passage of wheels.

(b) Classes 3 through 6 track must be equipped with rail anchors through and on each side of track crossings and turnouts, to restrain rail movement affecting the position of switch points and frogs.

(c) Each flangeway at turnouts and track crossings must be at least 1½ inches wide.

§ 213.135 Switches.

(a) Each stock rail must be securely seated in switch plates, but care must be used to avoid canting the rail or overtightening the rail braces.

(b) Each switch point must fit its stock rails properly, with the switch stand in either of its closed positions to allow wheels to pass the switch point. Lateral and vertical movement of a stock rail in the switch plates or of a switch plate on a tie must not adversely affect the fit of the switch point to the stock rail.

(c) Each switch must be maintained so that the outer edge of the wheel tread cannot contact the gage side of the stock rail.

(d) The heel of each switch rail must be secured by fastenings designed for that purpose and the bolts in each heel must be kept tight.

(e) Each switch stand and connecting rod must be securely fastened and operable without excessive lost motion.

(f) Each throw lever must be maintained so that it cannot be operated with the lock or keeper in place.

(g) Each switch position indicator must be clearly visible at all times.

(h) Unusually chipped or worn switch points must be repaired or replaced. Metal flow must be removed to insure proper closure.

§ 213.137 Frogs.

(a) The flangeway depth measured from a plane across the wheel-bearing area of a frog on class 1 track may not be less than 1⅜ inches, or less than 1½ inches on classes 2 through 6 track.

(b) If a frog point is chipped, broken, or worn more than three-eighths inch down and be 6 inches back, operating speed over that frog may not be more than 10 miles per hour.

(c) If the tread portion of a frog casting is worn down more than three-eighths inch below the original contour, operating speed over that frog may not be more than 10 miles per hour.

§ 213.139 Spring rail frogs.

(a) The outer edge of a wheel tread may not contact the gage side of a spring wing rail.

(b) The toe of each wing rail must be solidly tamped and fully and tightly bolted. Each worn thimble or shoulder bolt must be replaced.

(c) Each frog with a bolt hole defect or head-web separation must be replaced.

(d) Each spring must have a tension sufficient to hold the wing rail against the point rail.

(e) The clearance between the hold-down housing and the horn may not be more than one-quarter inch.

§ 213.141 Self-guarded frogs.

(a) The raised guard on a self-guarded frog may not be worn more than three-eighths inch.

(b) Frog points may not be worn more than three-eighths inch below either tread surface.

(c) If repairs are made to a self-guarded frog without removing it from service, the guarding face must be restored before rebuilding the point.

§ 213.143 Frog guard rails and guard faces; gage.

The guard check and guard face gages in frogs must be within the limits prescribed in the following table:

Class of track	Guard check gage: The distance between the gage line of a frog to the guard line[1] of its guard rail or guarding face, measured across the track at right angles to the gage line,[2] may not be less than—	Guard face gage: The distance between guard lines,[1] measured across the track at right angles to the gage line,[2] may not be more than—
1	4′ 6¼″	4′ 5¼″
2	4′ 6⅜″	4′ 5⅛″
3, 4, 5, 6	4′ 6½″	4′ 5″

[1] A line along that side of the flangeway which is nearer to the center of the track and at the same elevation as the gage line.
[2] A line five-eighths inch below the top of the center line of the head of the running rail, or corresponding location of the tread portion of the track structure.

Subpart E—Track Appliances and Track Related Devices

§ 213.201 Scope.

This subpart prescribes minimum requirements for track appliances and track related devices, including derails, switch point protectors, bumping posts, wheel stops, equipment defect detectors, track obstruction detectors, and expansion joints.

§ 213.203 Operation of track appliances and track related devices generally.

(a) Each track appliance and track related device must operate properly and perform its intended function.

(b) An owner of track to which this part applies who learns, through inspection or otherwise, that a derail, switch point protector, bumping post, equipment defect detector, or track obstruction detector is inoperable or does not operate properly, shall repair or replace it as soon as necessary to avoid any actual operating hazard. If the owner considers it necessary in the interest of safety, he shall reduce operating speed or stop operations over the track served by that appliance until the repair or replacement is completed.

§ 213.205 Derails.

(a) Each derail must be clearly visible. When in a locked position a derail must be free of any lost motion which would allow it to be operated without removing the lock.

(b) When the lever or a remotely controlled derail is operated and latched it must actuate the derail.

§ 213.207 Switch heaters.

The operation of a switch heater must not interfere with the proper operation of the switch or otherwise jeopardize the safety of railroad equipment.

Subpart F—Inspection

§ 213.231 Scope.

This subpart prescribes requirements for the frequency and manner of inspecting track to detect deviations from the standards prescribed in this part.

§ 213.233 Track inspections.

(a) All track must be inspected in accordance with the schedule prescribed in paragraph (c) of this section by a person designated under § 213.7(b).

(b) Each inspection must be made on foot or by riding over the track in motor vehicle or track vehicle at a speed that allows the person making the inspection to visually inspect the track structure for compliance with this part. If a vehicle is used, the speed of the vehicle may not be more than 5 miles per hour when passing over track crossings, highway crossings, or switches.

(c) Each track inspection must be made in accordance with the following schedule:

Class of track	Type of track	Required frequency
1, 2, 3	Main track and sidings.	*Weekly*, or *before use*, if the track is used less than once a week, or *twice weekly*, if the track carries passenger trains or more than 10 million gross tons of traffic during the preceding calendar year.
1, 2, 3	Other than main track and sidings.	Monthly.
4, 5		Twice weekly.
6		Three times weekly.

(d) If the person making the inspection finds a deviation from the requirements of this part, he shall immediately initiate remedial action.

§ 213.235 Switch and track crossing inspections.

(a) Except as provded in paragraph (b) of this section, each switch and track crossing must be inspected on foot at least monthly.

(b) In the case of track that is used less than once a month, each switch and track crossing must be inspected on foot before it is used.

§ 213.237 Inspection of rail.

(a) In addition to the track inspections required by § 213.233, at least once a year a continuous search for internal defects must be made of all jointed and welded rails in classes 3 through 6 track, and class 2 track over which passenger trains operate.

(b) Inspection equipment must be capable of detecting defects between joint bars, in the area enclosed by joint bars, and in welds.

(c) Each defective rail must be marked with a highly visible marking on both sides of the web and base.

§ 213.239 Special inspections.

In the event of fire, flood, severe storm, or other occurrence which might have damaged track structure, a special inspection must be made of the track involved as soon as possible after the occurrence.

§ 213.241 Inspection records.

(a) Each owner of track to which this part applies shall keep a record of each track inspection and each rail inspection required to be performed on that track under this subpart.

(b) Track inspection records must be prepared on a daily basis and signed by the person making the inspection. They must specify the track inspected, date of inspection, location and nature of any deviation from the requirements of this part, and the remedial action taken. The owner shall retain a track inspection record at its division headquarters for at least 1 year after the inspection covered by that record.

(c) Rail inspection records must specify the location and nature of any internal rail defects found and the remedial action taken. The owner shall retain a rail inspection record for at least 2 years after the inspection.

(d) Each owner required to keep inspection records under this section shall make those records available for inspection and copying by the Federal Railroad Administrator or his designee during regular business hours.

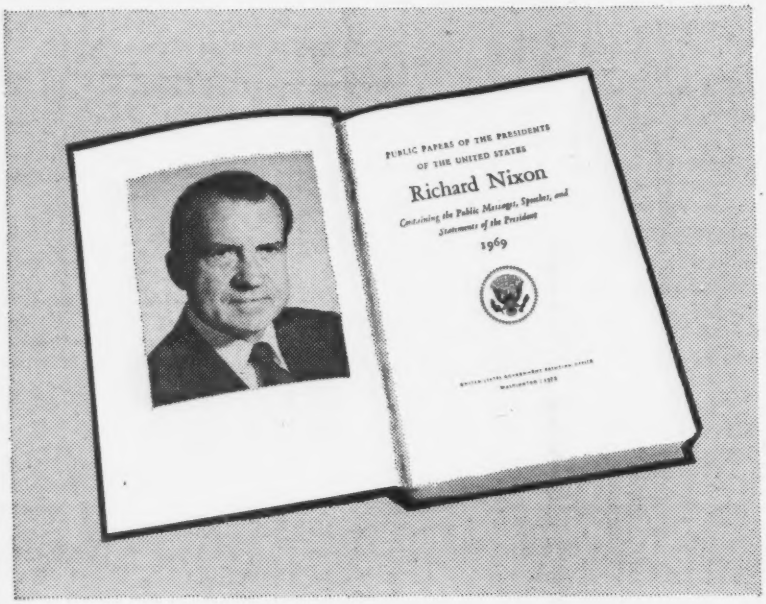
APPENDIX A—MAXIMUM ALLOWABLE OPERATING SPEEDS FOR CURVED TRACK

[Elevation of outer rail (inches)]

Degree of curvature	0	½	1	1½	2	2½	3	3½	4	4½	5	5½	6
	Maximum allowable operating speed (m.p.h.)												
0°30′	93	100	107										
0°40′	80	87	93	98	103	109							
0°50′	72	78	83	88	93	97	101	106	110				
1°00′	66	71	76	80	85	89	93	96	100	104	107	110	
1°15′	59	63	68	72	76	79	83	86	89	93	96	99	101
1°30′	54	58	62	66	69	72	76	79	82	85	87	90	93
1°45′	50	54	57	61	64	67	70	73	76	78	81	83	86
2°00′	46	50	54	57	60	63	66	68	71	73	76	78	80
2°15′	44	47	50	54	56	59	62	64	67	69	71	74	76
2°30′	41	45	48	51	54	56	59	61	63	66	68	70	72
2°45′	40	43	46	48	51	54	56	58	60	62	64	66	68
3°00′	38	41	44	46	49	51	54	56	58	60	62	64	66
3°15′	36	39	42	45	47	49	51	54	56	57	59	61	63
3°30′	35	38	40	43	45	47	50	52	54	55	57	59	61
3°45′	34	37	39	41	44	46	48	50	52	54	55	57	59
4°00′	33	35	38	40	42	44	46	48	50	52	54	55	57
4°30′	31	33	36	38	40	42	44	45	47	49	50	52	54
5°00′	29	32	34	36	38	40	41	43	45	46	48	49	51
5°30′	28	30	32	34	36	38	40	41	43	44	46	47	48
6°00′	27	29	31	33	35	36	38	39	41	42	44	45	46
6°30′	26	28	30	31	33	35	36	38	39	41	42	43	45
7°00′	25	27	29	30	32	34	35	36	38	39	40	42	42
8°00′	23	25	27	28	30	31	33	34	35	37	38	39	40
9°00′	22	24	25	27	28	30	31	32	33	35	36	37	38
10°00′	21	22	24	25	27	29	29	31	32	33	34	35	36
11°00′	20	21	23	24	26	27	28	29	30	31	32	33	34
12°00′	19	20	22	23	24	26	27	28	29	30	31	32	33

[FR Doc.71-8711 Filed 6-22-71;8:45 am]

PUBLIC PAPERS OF THE PRESIDENTS OF THE UNITED STATES



Richard Nixon — 1969

1183 Pages – Price: $14.50

CONTENTS

- Messages to the Congress
- Public speeches and letters
- The President's news conferences
- Radio and television reports to the American people
- Remarks to informal groups

PUBLISHED BY

Office of the Federal Register
National Archives and Records Service
General Services Administration

ORDER FROM

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

PRIOR VOLUMES

Volumes covering the administrations of Presidents Truman, Eisenhower, Kennedy, and Johnson are available at varying prices from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.